

Lies, damn lies and cost-effectiveness

James A McGuigan MB, BCh, FRCS

Consultant Thoracic Surgeon
Royal Victoria Hospital



The rationing of health care is not new. If we are interested in the origins of health economics we should remember 1699 (not quite a tercentennial). This was the year that William Petty published his discourse that evaluated many things including human beings in "Political Arithmetick". Since then the investment in health has depended on the wealth of the individual or state and the emphasis on health provision. In 1978 the World Health Organisation met at Alma Ata and defined the factors that led to the allocation of primary care resources; economic conditions, socio-cultural attitudes and political characteristics.

One of the greatest problems with publicly funded health care is a high rate of inflation. As the population becomes relatively more elderly greater demands ensue. Improvements in imaging and treatment technologies result in cost increases which are additional to underlying inflation. New drug therapies are expensive to develop and therefore newer drugs cost more. Politicians and the media have artificially raised expectations that have financial implications. The failure to keep up with "medical hyperinflation" was most dramatically seen in Britain in the 1980's. Inability to finance real cost increases led to cuts in services, although many politicians, in "Marie Antoinette" fashion, insisted that things were getting better.

Professor Ham has calculated that the real annual increase in hospital funding during the 1980's was 1.6% above general inflation. This was insufficient to match medical inflation and produced a cumulative deficit in hospital funding. The public were misled by statistics that seemed to indicate that the finances of hospitals were improving in relation to baseline inflation but this was of little relevance.

This kind of dealing in fiscal semantics brings to mind Mark Twain's biographical remarks, attributed originally to Benjamin Disraeli, "There are three kinds of lies, lies, damned lies and statistics". Hansard also attributes this phrase to Harold Wilson.

Statistics were often quoted which were at variance with popular perceptions. New units for monitoring activity in treatment episodes were introduced which were viewed with suspicion by health professionals.

Civil service surrealism was in full sway, to a degree that the Jonathon Lynn and Antony Jay's fictional characters Sir Humphrey Appleby or Bernard Wooley would have endorsed.

Health care depends on taxation and the performance of the general economy. The United Kingdom rate of growth fell in the 1980's. There was a dogma that almost any cut in public spending was desirable, regardless of the consequences. The attempt to try to replace a mixed economy with a service dominated system was not entirely successful. The visible trade balance that had been within two thousand million pounds of breakeven since the 1950's, deteriorated. There was a year on year deterioration from 1980 as the manufacturing base was reduced. By 1990 the visible trade balance bottomed out at minus twenty thousand million pounds annually. Between 1970 and 1995 the percentage of the workforce in manufacturing had declined from 33.7% to 15.4%.

Adherence to the simplistic monetarist policies consistent with "sound economic management" saw the British economy decline relative to our trading partners. In 1995, the group of G7 nations recorded Britain firmly in last place behind Italy and France, ranked according to gross domestic product [GDP] per head of population.

By 1988, the fraction of GDP spent on health was only 5.9% which was below all of our major economic competitors. There was a repetitive underspend each year in the British health system. The King's Fund Institute published a national cumulative underfunding between 1981 and 1988 of £1,800 million for hospital and community services. Only five countries, in the greater European Area, spend less on health than the UK (expressed as a fraction of GDP). These countries include Turkey and Portugal. Not only do our major competitors spend a higher fraction of GDP but the higher GDP per head in those countries produces a multiplier effect. Proportionately greater amounts are spent on patients by countries such as Germany and France.

The oft vented assertion that we waste less in our system, is not borne out by comparative data, that indicate higher standards of health care in other countries. Examples are found in perinatal mortality,

survival following myocardial infarction and in certain cancers. Significant financial efficiencies have been made and further reduction in spending creates pressure to reduce existing services. By 1990 we had already seen a reduction in the numbers of hospital nurses and the closure of no less than 4,000 beds. [National Association of Health Authorities and Trusts]

Health spending has been described as a bottomless pit. Enoch Powell described an "infinity of demand" in 'A New look at Medicine and Politics'. Such facile but fallacious logic is often used to defend decisions where improvements in healthcare have been prevented because of significant cost implications. This is seen in the underprovision of intensive care beds.

In the early 1980's a working group under Norman Fowler looked at alternative funding for health. While private financing was attractive this would lead to higher spending with some improvements in health, as evidenced by the USA. The cheapest system was to use taxes to pay for health while central control could restrict growth in provision. No official report from this working party was ever published.

Improvements were obviously needed in NHS management and the "grocer" Roy Griffiths produced a report of how the system could be changed to more closely resemble "Sainsbury's" efficiency. Many good quality managers were appointed and major changes were foreseen. However, when political interference became rife, many of these managers resigned.

The Department of Health and Social Services realised that cuts would have to be made by health authorities. No guidance was given to where these cuts should be made. No official recognition of the inevitable cuts was politically palatable and a new term was coined, Cost Improvement Programmes [CIP's]. These programmes were introduced and were frequently euphemisms for many service cuts. Propaganda was more important than actual improvement in treatment.

In the 1980's there was steadfast opposition to public acceptance of rationing or honestly, admitting that certain services could no longer be provided by the NHS. The Government determinedly ensured that the finance debate should not be raised. Instead of recognising the effects of serious underfunding, the emphasis was put on blaming the existing system of delivery for the majority of the problems. This is a recurring theme.

Originally described by Enthoven in 1985, the idea of a market where hospitals would compete for resources was given the full backing of some politicians. The idea was developed by organisations not universally acclaimed for their concerns for the sick or

disadvantaged members of society. It was actually the Adam Smith Institute and the Centre for Policy Studies that developed the ideas of 'The Internal Market'.

Kenneth Clarke drew up the white paper, "Working for Patients", published in 1989. This had major implications for acute hospital services. With great political wisdom, it was stated that the real aims of the changes were to raise standards of care, to place a greater emphasis on health promotion and to offer a wider choice. It was suggested [perhaps a little cynically] that the changes might detach politicians from criticism for inevitable future cuts by blaming health authorities and acute hospitals instead. The major problem of underlying cumulative underfunding was not to be corrected. The government and DHSS would not openly admit that certain areas of health care might need to be removed from the NHS if stretched health authorities and acute hospital units were to handle difficult situations.

Stresses became clear between health authorities and hospital trusts as a result of government underfunding. Since those in power in these organisations were often regarded by the public as "bungling bureaucrats", blame could be very effectively removed from "the centre". Many people believed that the mythical administrator's paradise of St Edward's Hospital [in "Yes Minister"] was close to real life. This was a very efficient hospital with many offices and administrators where "there would probably be some patients when the financial situation has eased up".

It would be wrong not to recognise the improvements in many aspects of the National Health Service since the White paper of 1989. Management is vastly improved at hospital level. Financial control is better and the importance of strategic planning is realised. From the patients' point of view the service is better focused and more accountable. Despite popular assumptions, the fraction of costs attributed to trust hospitals' management is low, considering the complexity and relative size of the budgets. This area is likely to become a target for "efficiencies" as cumulative underfunding, the real problem, persists and other scape-goats are sought.

Resources have been appropriated in the past, based on selective medical assumptions and compounded by management consultants' teams who were 'feeling their way' in the new seller-buyer scheme for health. In surgical services the assertion that procedures would become overwhelmingly laparoscopic and associated with short-term admissions was embraced by government departments despite lack of evidence. The belief that fewer elderly patients would require admission to medical units was wishful thinking. Self delusion about future demands seemed to be the order

of the day because it fitted fiscal restrictions.

The role of management consultants in all of this would be amusing if the resources spent on them were not so large. One executive described management consultants as “experts” who borrowed your watch and then charge to tell you the time.

Health economics has come of age in the 1990’s NHS. Terms such as value for money and cost-benefit ratios are glibly used by people who know little of their precise meaning. Lord Kelvin correctly stated that when one can numerically quantify a problem one is half-way to solving it. However the units of cost comparison against health gain are not as simple as the units of temperature change. It is important that we use the measurements of health care versus costs in a scientific attempt to assess priorities not an “AppletonWooley” theatrical exercise in mathematical semantics to justify short-term savings.

We do not have a credible science of health economics. The simplistic concepts presently used in this area are limited in their usefulness. Policy decisions always have been the result of making value judgements, setting priorities and calculating how we can best achieve them. In the general economy, growth and efficiency are firmly bound. All macroeconomic changes have distributive results and inevitable implications for equity. Against this background, public health economics has not yet begun to grapple with the major problems of determining how much should be spent.

The most basic economic assessment of treatments requires a step analysis consisting of the selection of alternatives, costing and comparison of outcomes. Unfortunately we place an emphasis on the short term costings. There is a lack of understanding of what cost means in a limited overall budget. In these situations costs need to be defined in terms of the opportunity that has been denied if the investments were diverted to their best alternative use. There is no useful strategy or model that allows a mechanism for determining ‘best alternative use’.

Best alternative use in trust terms may be that which improves the hospital’s image. This is seen when technologically advanced high profile specialties which are relatively overresourced expand, to the detriment of less glamorous areas. For the community the best possible use might be to replace cheap psychiatric drugs with more expensive versions that ensure better patient compliance.

Cost-effectiveness is a crude measure that must not be used as a stand-alone factor to determine policy. It simply produces a ratio of a measured effect, such as the cost of a treatment for one patient for one month divided by the percentage of patients successfully

responding to the treatment. Equal importance is given to increments of cost and effect, even when the effect is saving lives! It is only of guaranteed ethical value when used in its special variant of cost-minimisation where the clinical outcome is the same for different treatments at different costs. Cost-effectiveness measurement is useful in a factory making washers regardless of how many are damaged and thrown out as a result of the process. This may not be a good model for assessing health-care funding. In healthcare individual outcome is of enormous importance. When the most cost-effective drug is not the most effective drug, because of disproportionately high costs, ethical problems arise. Is it right to use the most cost-effective treatment when a number of patients are thus deprived of a cure? Cure may have been achieved by the use of a less cost-effective but more effective treatment in the first place.

TABLE 1.

Ethics versus economics

	Cost per unit	Effectiveness	Cost-effective ratio
Vaccine A [VA]	£100	100%	£100/100% = £1 per 1%
Vaccine B [VB]	£20	50%	£20/50% = £0.4 per 1%

VA is 2.5 times more expensive than VB per 1% effect [£1 versus £ 0.4]

VA should still be used as it would be unethical to leave 50% of the population unprotected

In a theoretical example two vaccines are available to prevent a severely maiming or fatal disease. [Table] Vaccine A [VA] costs £100 per person and is 100% successful. Its cost- effective ratio (CER) is one pound per one per cent treated successfully. Vaccine B [VB] costs £20 per person and is 50% successful with a CER of only £0.4 per one per cent. If we allow cost-effectiveness alone to make our decision we should use VB, but that would leave 50% unprotected. VA is the ethical choice. So why do the cost-effectiveness calculation? One cynical view may be that this ratio is useful to justify limiting investment.

While many policy makers and budget holders use cost-effectiveness as a defence for decision making one suspects they are like the drunk leaning against a lamp-post. They are using the structure more in support a weak position than as a means of illumination.

Other problems exist with cost-effectiveness ratios. In pharmaceutical studies the effect measured may be selected to suit the drug produced by the organiser of the study. Patient selection criteria may enlist those who will show the greatest effect with a particular

drug. The side-effects of a drug are not measured in cost-effectiveness studies. Most importantly, in controlled studies compliance is high in well motivated patients who have side-effects carefully explained to them, and who are more likely to complete courses of treatment. Drugs that must be taken with an empty stomach and have high levels of side-effects may have very different cost-effectiveness outside controlled studies. When patients do not fully comply with the optimum conditions drugs may not act properly.

More sophisticated indices of the relative 'worth' of drugs exist. Cost-benefit analysis is frequently quoted but rarely measured since it is almost impossible to calculate accurately. Cost is related to all the benefits and disadvantages that result from treatment. If a patient's arthritis is improved one should take into consideration the cost of the quicker wearing out of shoes.

The most promising prospect is the use of cost-utility analysis. Here a value is put on the clinical improvement often using QALY's [Quality Adjusted Life Years]. By having a monetary value on both sides of the equation, costs and improvements can be related in direct terms. This may be unattractive to budget controllers. It is hard to opt for a drug that saves a few pence per day when the advantages to the patient can be measured in several pounds per day. Alas, the interest in health economics is frequently anti-intellectual and used to justify cuts rather than to investigate the value of treatments.

Rather than an emphasis on simplistic economics in the NHS we need to research the value of good health. We must evaluate health education more fully and investigate methods of improving this with long-term analysis of cost implications. The debate about the inefficiency or efficiency of a purchaser-provider split remote from central budget holders will persist. The real debate as to what should be expected of a health service seriously underfunded over many years has been unpalatable to politicians in the past.